B.Sc. Forensic Science: Semester VI

FS1606: Computer Science - VI

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week	Class Test: 15 Marks
Tutorials: 1 hr/Week	Teachers Assessment: 5 Marks
Credits: 4	Attendance: 5 Marks
	End Semester Exam: 75 marks

Course outcomes:

After the completion of the course the students will be able:

- To develop understanding of computer networks and communication basics
- To understand design issues and services at different layers of reference models
- To learn various error detection/correction techniques, routing protocols, congestion control algorithms, and connection establishment/release.
- To describe and analyze related technical, administrative, and social aspects of networking

Unit I – Data Communication and Computer Network

- Introduction to Signals, Data and Information, Data communication, Characteristics of data communication, Components of data communication, Data Representation, Data Flow, Simplex, Half Duplex, Full Duplex, Analog and Digital Signals, Periodic and Aperiodic signals, Time and Frequency Domain, Composite Signals

Unit II – Basic concepts of Networks

- Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture, overview of OSI reference model, overview of TCP/IP protocol suite.
- Physical Layer: Cabling, Network Interface Card, Transmission Media Devices: Repeater, Hub, Bridge, Switch, Router, Gateway.

Unit III – Data Link Layer

- Designing issues, Framing and Data Link Control, Error detection schemes (parity, checksums, CRCs), Error correction schemes (Hamming codes, binary convolution codes), Data link layer protocols (Simplest, Stop & Wait ARQ, Go Back N ARQ, Selective Repeat ARQ, Sliding Window), MAC sub layer (Ethernet, ALOHA, CSMA family, Contention free access/Token Ring)

Unit IV – Network Layer

- Design issues, Switching, Routing algorithms (Shortest path, Link state, Flooding, Broadcast, Multicast), Packet Scheduling, Internetworking, Internet Protocol (IPv4, IPv6), IP addressing, Internet Control Protocols (IMCP, ARP, DHCP), Mobile IP.

Unit V

- Transport Layer: Transport layer services, Connection establishment and teardown, TCP, UDP, Congestion Control, Quality of Service, Domain Name System, World Wide Web
- Application Layer : Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP
- Network Security : Common Terms, Firewalls, Virtual Private Networks

Head
Department of Forensic Science
Faculty of Science
Invertis University Bareilly (U.P.)

Dean
Faculty of Science
Invertis University Bareilly (U.P.)